



Summer School on Advanced Research in Turbomachinery (ART)

28 June-2 July 2021
Florence, Italy

ART 2021

An event organized by the Department of Industrial Engineering (DIEF) of the University of Florence

The school - usually taking place in the Historic Centre of Florence - will be held online due to the current travel limitations and social distancing.

Lectures, organized in both plenary and parallel sessions, will be held by Professors and Researchers from DIEF, who are presently working in the corresponding fields of research

Relevant advances in the field of Turbomachinery research will be addressed, including:

- turbomachinery aerodynamics
- aeroelasticity and aeroacoustics
- heat transfer and cooling
- two-phase flows
- radial machinery and turbochargers
- uncertainty quantification
- wind energy
- multi-scale modeling
- gas turbine combustion
- hydraulic machines

With the support of:



Keynote Speakers:

Dr. Jean-Francois Brouckaert (Chief S.O. "Clean Sky")

Prof. Ricardo Martinez-Botas (Imperial College)

Prof. Tom Verstraete (Von Karman Institute)

Sponsored by:



Sessions

Session #	Speaker	Title
Keynotes		
K1	Prof. R. Martinez-Botas (Imperial College)	Unsteady effects and timescales of radial turbomachinery in a real engine environment
K2	Dr. J-F. Brouckaert (CleanSky 2)	Climate neutral aviation by 2050
K3	Prof. T. Verstraete (VKI)	Gradient-based multidisciplinary design optimization of turbomachinery components
Technical sessions		
Monday, June 28th		
M1	Prof. M. Marconcini	Centrifugal pumps/compressors performance, design and optimization
M2	Dr. A. Bianchini	Recent developments in wind turbine technology and research
Tuesday, June 29th		
T1	Dr. F. Balduzzi	Simulating the new generation of wind turbines: challenges and limitations
T2	Dr. A. Giusti (Imperial College)	Advanced numerical models for gas turbine turbulent combustion
T3	Dr. A. Andreini	Multi-physics and multi-scale modelling of gas turbines components
T4	Dr. R. Da Soghe (Ergon Research)	Secondary air systems: review and applications
Wednesday, June 30th		
W2	Dr. M. Carnevale (Univ. of Bath)	Uncertainty quantification in computational fluid dynamics for turbomachinery
W3	Dr. S. Salvadori (POLITO)	Cooling technologies for gas turbines
W4	Dr. L. Mazzei - Dr. T. Bacci	Combustor - turbine interactions
W5	Prof. D. Fiaschi	Radial turboexpanders: the case of ORC cycles
Thursday, July 1st		
H1	Prof. M. Marconcini	The role of turbulence transition in turbomachinery aerodynamics
H2	Prof. R. Pacciani	Numerical modeling of transition in turbomachinery
H3	Dr. L. Pinelli - Dr. F. Taddei	Turbomachinery noise: numerical methods and experimental techniques
H4	Dr. F. Poli	Turbomachinery aeromechanics: aerodynamically induced vibrations
H5	Prof. I. Kallinderis (Univ. of Patras)	Flow sensors for adaptive grid generation
Friday, July 2nd		
F1	Dr. F. Mazzelli	Stationary compression systems and ejectors
F2	Dr. A. Picchi	Experimental methods for gas turbine heat transfer investigation
F3	Dr. L. Romani	Dynamic pressure measurements in turbomachinery applications: the case of vaneless diffuser rotating stall
F4	Dr. S. Puggelli (SAFRAN Tech)	Dynamic mesh adaptation for moving fronts and interfaces
Industry sessions		
I1	Dr. M. Ruggiero (Baker Hughes)	Perspectives and funding opportunities in the Green Deal scenario
I2	Dr. Min Xu (ANSYS) Dr. J. Einzinger (ANSYS)	Direct tuning strategy for the GEKO turbulence model using the adjoint method and machine learning Meta-model method (ROM) to compute the bearing coefficients for rotor dynamic applications
I3	S. Drennan (Convergent Science)	Role of Detailed Chemistry in Gas Turbine Combustion Modeling

Technical Program

	Monday, June 28 th	Tuesday, June 29 th	Wednesday, June 30 th	Thursday, July 1 st	Friday, July 2 nd
8:30 - 8:45	Welcome speech				
8:45 - 10:00	Keynote K1	Session T1	Keynote K3	Session H1	Session F1
10:00 - 11:15	Keynote K2	Session T2	Session W2	Session H2	Session F2
11:15 - 11:30	Break	Break	Break	Break	Break
11:30 - 12:45	Session M1	Session T3	Session W3	Session H3	Session F3
12:45 - 14:00	Lunch break	Lunch break	Lunch break	Lunch break	Lunch break
14:00 - 15:15	Session M2	Session T4	Session W4	Session H4	Session F4
15:15 - 16:30	Industry session I1	Industry session I2	Session W5	Session H5	Industry session I3

General interest
 Technical session
 Industry session
 Breaks

